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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/721,556

11/25/2003

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26652 7590 05/01/2007  
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EXAMINER

JAGANNATHAN, MELANIE

ART UNIT

PAPER NUMBER

2616

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PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	Application No. 10/721,556	Applicant(s) HUANG ET AL.	
	Examiner Melanie Jagannathan	Art Unit 2616	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

#### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) ☒ Responsive to communication(s) filed on 25 November 2003.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) ☒ Claim(s) 8-10 and 16-29 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 16-25 is/are allowed.
- 6) ☒ Claim(s) 8-10 and 26-29 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 25 November 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f):
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- |   |   |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                  | 5) <input type="checkbox"/> Notice of Informal Patent Application                       |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

### DETAILED ACTION

- Examiner has considered Preliminary Amendment mailed 11/25/2003.
- Claims 8-10 and 16-29 are pending.

#### ***Claim Rejections - 35 USC § 103***

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

2. Claims 8, 10, 26-29 are rejected under 35 U.S.C. 103(a) as being unpatentable over Beshai U.S. 6,356,546 in view of Jakobik et al. US 6,195,367.

Regarding claim 8, the claimed grouping structures in a network into structure groups, wherein each structure comprises at least two nodes is disclosed by five-module network with each module (Figure 10, elements A-E) having local ports. The

claimed determination of virtual circuit information for every pair of nodes in groups is disclosed by local ports routing traffic to local sinks (Figure 10). See column 19, lines 18-40. The claimed connections between groups are disclosed by the modules being interconnected by links where a module (Figure 10, element A) can send data to another module (element C) by direct route (element 99) or through two-link routes (elements 100-101 or 102-103). The claimed determination of least cost path using virtual circuit information and connection information is disclosed by each module having a module control element (Figure 7, element 85) that receives least cost routing table information from network controller to be used to select route for each path. See column 15, lines 37-61.

The claimed cost with node and link in network and least cost path determination considers cost of nodes and links visited on a path is disclosed by cost of each route being taken into account and that route lengths are also taken into account since they contribute in a substantial cost difference between routes. See column 16, lines 39-65. The claimed cost increased when a signal changes channels is disclosed by direct route between nodes attempted first but if none of the direct routes are available then alternate routes involving two hops are attempted in order to minimize cost of route. See column 16, lines 39-65.

Beshai discloses all the limitations except for link may be an express link or local link, and the cost of an express link is less than the cost of a local link. Jakobik et al. discloses use of express ring transport nodes (Figure 1, elements 2 and 3) and SONET express rings (elements 4 and 5) using fiber optic links to handle traffic and support

Art Unit: 2616

signals that conform to higher-level SONET protocols such as OC-192. Furthermore, Jakobik et al. discloses the cost of an OC-192 node is presently far lower than the cost of a DCS switch with OC-12 interfaces. See column 5, lines 1-10 and column 10, lines 12-13. At the time the invention was made it would have been obvious to a person of ordinary skill in the art to modify the system of Beshai to use express or local links. One of ordinary skill in the art would be motivated to do so for cost efficiency. See column 10, lines 12-13.

Regarding claim 10, the claimed SONET equipment, PDH equipment, dense wavelength division multiplexing equipment is disclosed by the modules being connected by optical cross connectors (Figure 6, element 84), which are interconnected by optical links, and the optical links supporting several wavelengths. See column 14, lines 50-61.

Regarding claim 26, the claimed structures in structure groups have same set of office locations is disclosed by modules having same ring network topology and topology being updated when there is an addition of a module. See column 15, lines 43-48.

Regarding claim 27, the claimed virtual circuit information including information regarding whether a path is available is disclosed by to promote efficient utilization of network, the vacancy of all channels is substantially equalized and there is a direct path and (N-2) two-hop paths available to each connection in the network where N is the number of modules where direct routes are attempted first and then the alternate routes are attempted. See column 16, lines 7-9, and lines 39-52.

Regarding claim 28, the claimed path having time division multiplexing capability is disclosed by a method of exchanging path numbers and connection numbers similar to using time slot exchanges. See column 27, lines 60-67.

Regarding claim 29, the claimed path having wavelength division multiplexing capability is disclosed by each optical link supporting several wavelengths and a wavelength constitutes a channel. See column 14, lines 50-54.

3. Claim 9 is rejected under 35 U.S.C. 103(a) as being unpatentable over Beshai and Jakobik et al. in view of Hummel U.S. 5,831,982. Beshai and Jakobik et al. disclose all the limitations of the claims except for the use of the Dijkstra algorithm. Hummel discloses the use of the Dijkstra routing algorithm to find the best route from node S to target node D. See column 4, lines 62-67 and Figure 1. At the time the invention was made, it would have been obvious to a person of ordinary skill in the art to use Dijkstra algorithm in combination of Beshai and Jakobik et al. One of ordinary skill in the art would be motivated to do this since it is a widely used algorithm for least cost path determination.

***Allowable Subject Matter***

4. Claims 16-25 are allowed. Prior art of record discloses all the limitations of the claims except for slot-edge matrix maintained for each data structure for various requestable time periods and availability of a channel is determined based on the slot-edge matrix.

### ***Conclusion***

5. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure:

- Graham et al. U.S. 6,097,722 discloses bandwidth management processes using variable virtual paths.
- Yuasa et al. U.S. 6,085,238 discloses a virtual LAN system.
- Cresswell et al. U.S. 5,905,712 discloses a data communication network with a number of end stations connected by rings.
- Nemirovsky et al. U.S. 5,216,591 discloses a method for efficient distributed data communications network backbone node location.
- Beshai et al. U.S. 6,404,735 discloses methods and apparatus for distributed control of multi-class network.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Melanie Jagannathan whose telephone number is 571-272-3163. The examiner can normally be reached on Monday-Friday from 8:00 a.m.- 5:00 p.m.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Chi Pham can be reached on 571-272-3179. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Art Unit: 2616

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.



Melanie Jagannathan  
Patent Examiner  
Art Unit 2616

4/24/07